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A Taxonomic Study of the Genus *Mordellistenoda* (Coleoptera, Mordellidae) from the Ryukyu Islands, Southwest Japan, with Description of a New Species

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Abstract A new mordellid beetle, *Mordellistenoda donan* is described from the Ryukyu Islands, Southwest Japan. It is somewhat similar in general appearance to *M. aka* (KÔNO, 1928) and *M. ohsumiana* (NAKANE, 1957), but can be clearly discriminated from the former by having the blackish brown body and the shorter 4th segment of antenna, and from the latter by having the hind tibial spurs almost the same in length and the flat elliptical terminal segment of the maxillary palpus in male.

Introduction

The genus *Mordellistenoda* ERMISCH comprises about ten known species at the present moment, and is known from Japan, Taiwan, southern China, the Malay Peninsula, Borneo Island, New Guinea and northern Australia. This genus was erected by ERMISCH (1941) for a single species, *M. fukiensis* ERMISCH, 1941, from southern China. It possesses a flat elliptical terminal segment of the maxillary palpus in male and the hind tibial spurs almost the same in length. After that, ERMISCH (1963) described another species of the genus from northern Australia by expanding the generic concept. BATTEN (1990) also described two new species from New Guinea following ERMISCH's (1963) concept of the genus. As the result of these studies, it became apparent that certain species placed in the genus did not possess two main characters noted above. SHIYAKE (1997) described four new species of the genus from Southeast Asia, and rearranged the generic concept, though there still remained many problems to be solved.

In Japan, KÔNO (1928) described a new species, *Mordellistena aka*, and NAKANE (1957 a) described a new species, *Glipostenoda ohsumiana*. Later, these two species were transferred to the genus *Mordellistenoda*, the former by NAKANE (1957 b), and the latter by NOMURA (1963). Thus, two species have hitherto been known as members of the genus *Mordellistenoda*.

In this paper, I am going to describe a new species of the genus *Mordellistenoda* from the Ryukyu Islands, and use the 8th abdominal sternite of female as an important morphological feature to recognize the species.

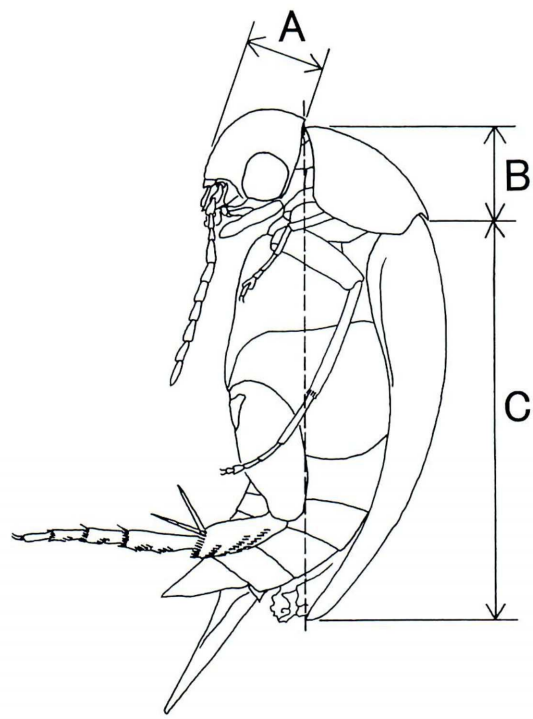


Fig. 1. Measuring method of head, pronotum and elytra, lateral view. —— A, Cephalic length; B, pronotal length; C, elytral length.

Materials and Methods

The materials used in this study were collected by myself and some other entomologists from 2003 to 2004. Almost all the external body parts of taxonomical importance (antennae, maxillary palpi, fore and hind legs, 8th abdominal sternite, and parameres) were mounted on a small piece of glass (10×5 mm) with drops of Canada balsam dissolved by 2-Ethoxyethanol, and were observed with binocular light microscope (Olympus CH2; up to 400×). After observation, this piece of glass was glued on a small piece of paperboard, and pinned under the specimens from which the necessary parts were removed. Measurements of lengths of head, pronotum and elytra were taken by the following methods (Fig. 1): head length was measured from the level of basal margin to the top of frons in profile; pronotal and elytral lengths were measured from tops of pronotum to the apices of elytra in profile. Additionally, body length was measured as a total of pronotal and elytral lengths.

Taxonomy

Genus *Mordellistenoda* ERMISCH

Mordellistenoda ERMISCH, 1941, 722 (type species: *Mordellistenoda fukiensis* ERMISCH, 1941); 1963, 298 (description and expansion of generic concept). —— SHIYAKE, 1997, 26 (taxonomical notes and review of generic concept).

Key to the Japanese Species of *Mordellistenoda*

1. Body almost brown; 4th segment of antenna much longer than 3rd but shorter than 5th; terminal segment of maxillary palpus quadrate; outer spur of hind tibia 0.4 times as long as the inner one; left paramere of male genitalia with a ventral branch ..... *M. ohsumiana.*
— Body almost reddish brown or blackish brown; 4th segment of antenna almost of the same length as 3rd or 5th; terminal segment of maxillary palpus flat and elliptical; outer spur of hind tibia almost of the same length as the inner one ..... 2.
2. Body almost reddish brown; 4th segment of antenna longer than 3rd but almost equal in length to 5th; left paramere of male genitalia without ventral branch .... *M. aka.*
— Body almost blackish brown; 4th segment of antenna almost equal in length to 3rd but shorter than 5th; left paramere of male genitalia with a ventral branch..... ..... *M. donan* sp. nov.

Mordellistenoda ohsumiana (NAKANE, 1957)

[Japanese name: Ohsumi-hime-hananomi]

(Fig. 3 A)

Glipostenoda ohsumiana NAKANE, 1957 a, 51.
Glipostenoda (s. str.) *ohsumiana*: CHÛJÔ, 1959, 11.
Mordellistenoda ohsumiana: NOMURA, 1963, 254. —— HATAYAMA, 1985, 396.
Falsomordellina ohsumiana: NOMURA, 1966, 51.

Eighth abdominal sternite of female with very long and simple basal lobe (Fig. 3 A), which is about 4.8 times as long as wide, aciculate at apex, and densely short-haired inside medio-apical margin, the hairs of apical margin relatively long.

Body length: 3.4–4.5 mm (excl. head and pygidium).

Materials examined. [Yonaguni Is., S. Ryukyus], Mandabaru: 1♀, 2–V–2004, T. TSURU; 2♂♂, 2♀♀, 1–V–2004, T. MITA; 1♂, 30–IV–2004, T. TSURU; 3♂♂, 4♀♀, 29–IV–2004, T. TSURU; 2♂♂, 1♀, Mt. Kubura-dake, Yonaguni Is., the Ryukyus, 30–IV–2004, T. MITA; [Iriomote Is., S. Ryukyus], 1♂, Mt. Sonai-dake, 30–IV–2003, T. KURIHARA.

Distribution. Japan (Honshu, Kyushu, Gotô Isls., Yaku Is., and Ryukyus).

Remarks. This species was regarded by HATAYAMA (1985) as a member of *Mordellistenoda*. However, it clearly differs from its generic concept in the characters

of the 4th antennal segment, the terminal segment of maxillary palpus, the hind tibial spurs and the left paramere. Therefore, its true systematic position should be revised in future when a full investigation of the group is made.

Mordellistenoda aka (KÔNO, 1928)

[Japanese name: Aka-hime-hananomi]

(Fig. 3 B)

Mordellistena aka KÔNO, 1928, 43.
Glipostenoda aka: NOMURA, 1951, 69.
Mordellistenoda aka: NAKANE, 1957 b, 50; 1960, 17. —— SHIYAKE, 1997, 26.

Eighth abdominal sternite of female with short and sectorial basal lobe (Fig. 3 B), about 1.6 times as long as wide, aciculate at apex, densely short-haired in marginal areas of apical half, four hairs of apical margin long.

Materials examined. [Mandabaru, Yonaguni Is., S. Ryukyus], 1♂, 2–V–2004, T. TSURU; 2♂♂, 1♀, 1–V–2004, T. TSURU & T. MITA; 1♂, 2♀♀, 30–IV–2004, T. TSURU & T. MITA; 2♂♂, 2♀♀, 29–IV–2004, T. TSURU & T. MITA.

Body length: 3.0–4.2 mm. (excl. head and pygidium).

Distribution. Japan (Honshu, Shikoku, Kyushu, Tsushima Is. and the Ryukyus), Taiwan.

Remarks. It is most probable that this species is a senior synonym of *Mordellistenoda fukiensis* ERMISCH. For the time being, however, I prefer to regard the latter as an independent species, since I have been unable to investigate the type series of *M. fukiensis* for the present study.

Mordellistenoda donan sp. nov.

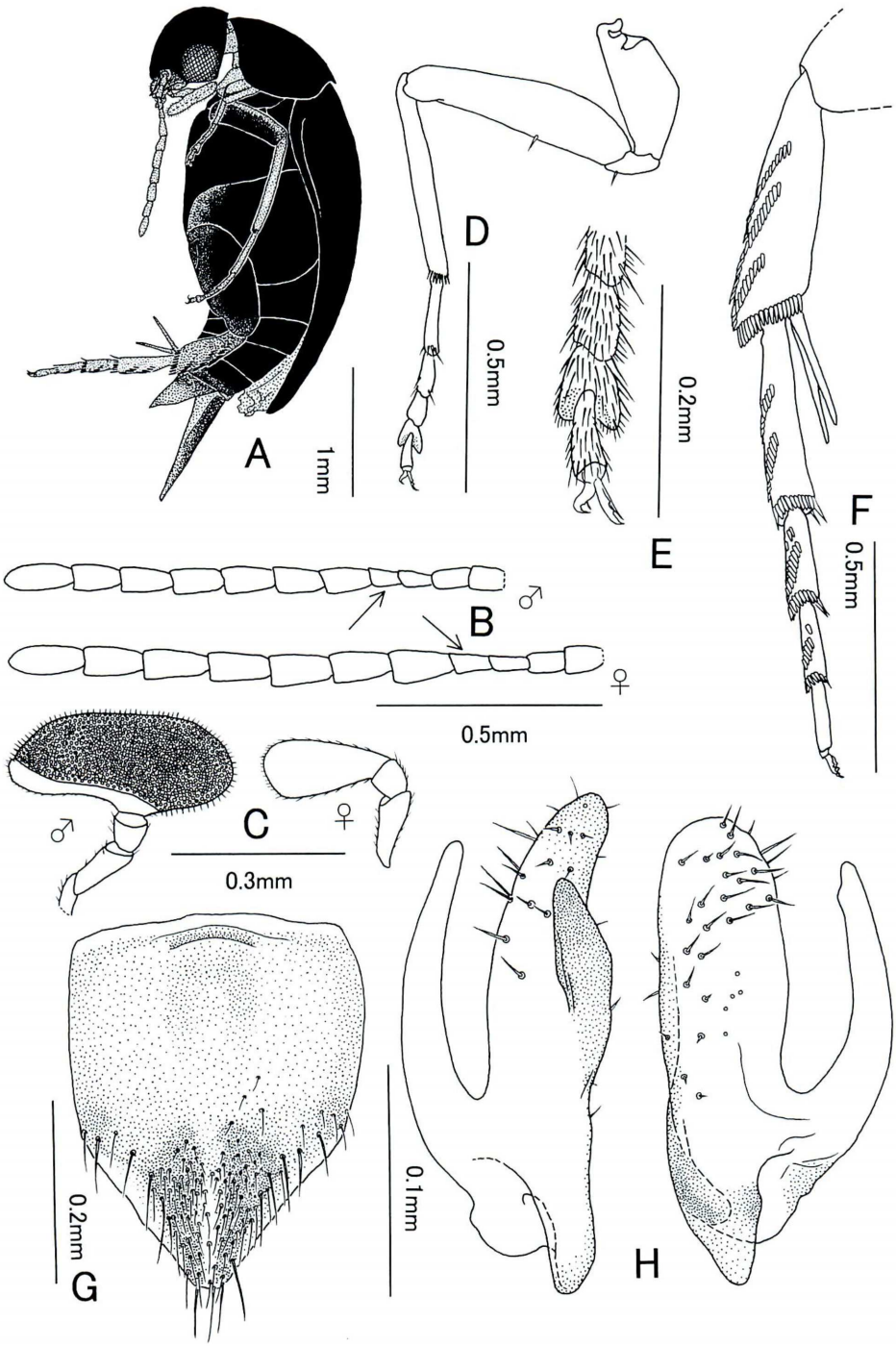
[Japanese name: Donan-hime-hananomi]

(Figs. 2 A–H, 3 C)

Male. Body almost blackish brown; mouth parts, fore coxae and tibiae, middle tibiae, fore and middle tarsi, and hind tibial spurs yellowish brown; antennae, middle fomora, hind tibiae and tarsi, and apical parts of pygidium and hypopygium brown; elytra and scutellum usually blackish blown, but the sometimes brown. Hairs on almost whole body shiny yellow.

Head strongly convex, about twice as wide as long; eyes somewhat large, nearly circular, not emarginate in front, sparsely haired; tempora very narrow, a little wider than the diameter of a facet. Antenna moderately long, about 2.4 times as long as

Fig. 2. *Mordellistenoda donan* sp. nov., holotype, ♂ and allotype, ♀, Yonaguni Is., S. Ryukyus, Southwest Japan. —— A, Habitus of male in lateral view; B, right antenna (4th segment arrowed); C, right maxillary palpus; D, right fore leg of male; E, distal segments of right fore tarsus of male; F, right hind leg of male; G, 8th abdominal sternite of male; H, parameres of male genitalia.


A
1mm
D
0.5mm
E
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F
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B
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C
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0.3mm
G
0.2mm
0.1mm
H

length of head (Fig. 2 B); 1st and 2nd segments cylindrical; 3rd and 4th a little shorter than 2nd, thin as compared with the others, broadened to the apices; 5th to 10th serrate, each about 1.6 times as long as 4th and about twice as long as wide; terminal segment oblong, about 1.4 times as long as the penultimate. Terminal segment of maxillary palpus flat and elliptical (Fig. 2 C), articulated to penultimate segment at middle of hind margin, densely covered with minute granulations and short erect hairs on dorsal and ventral surfaces except for inner margin. Pronotum about twice as long as wide, about 1.2 times as long as head; lateral margins gently crescent-shaped in profile, converging anteriorly in dorsal view; anterior angles broadly rounded at each tip, posterior ones somewhat rounded at each tip. Scutellum triangular, wider than long, with apex rounded. Elytra about 2.1 times as long as humeral width, about 4 times as long as pronotum, tapered posteriorly and broadly rounded at each apex. Apical margin of hypopygium acute without emargination. Pygidium straight and relatively short, about 0.4 times as long as elytron. Legs slender (Fig. 2 D–F); fore trochanter with a blackish seta in apical area of inner margin, fore femur with a blackish seta at middle of inner margin; each penultimate segment of fore and middle tarsi dilated to the apex, emarginate at apical margin, and surmounting terminal segment. Hind leg with long and oblique combs formulated as 3, 2, 1-2, 1-2; tibia with two basal combs nearly reaching medial axis, with apical one the shortest; 1st segment of tarsus with two oblique combs, 2nd segment with two oblique combs though the basal one is sometimes absent, 3rd with two oblique combs but basal one is vestigial or often absent, 4th segment without comb. Inner spur of hind tibia about 0.7 times as long as 1st segment of hind tarsus, outer one very long, slightly shorter than inner one.

Eighth abdominal sternite about 1.2 times as long as wide (Fig. 2 G); apical lobe protrudent and rounded at apex, densely short-haired in central area, sparsely long-haired on its margins.

Parameres as illustrated (Fig. 2 H); left paremere with normally thick main lobe, basal process heavily sclerotized, branching at the middle part of main lobe, ventral branch slightly incurved, apparently not reaching the top of main lobe; right paramere with normally thick main lobe, rounded at apex, ventral branch long and narrow, clearly not reaching the top of main lobe.

Female. Similar to male in general appearance, but different from it mainly in the following respects: 1) antenna about 2.7 times as long as length of head (Fig. 2 B), 2) eyes somewhat smaller than in male, 3) terminal segment of maxillary palpus elongated securiform (Fig. 2 C), 4) fore trochanter and femur without blackish hairs, 5) eighth abdominal sternite is provided with very long basal lobe which is divaricate at the apex (Fig. 3 C), about 5.1 times as long as wide, aciculate at apex, densely short-haired in apical half, and with very long hairs on apical margin.

Body length: 3.3–4.2 mm (excl. head and pygidium).

Type series. Holotype: ♂, Mandabaru, Yonaguni Is., S. Ryukyus, 2–V–2004, T. TSURU. Allotype: ♀, same locality as for the holotype, 30–IV–2004, T. TSURU. Paratypes: [same locality as for the holotype], 24♂♂, 4♀♀, 2–V–2004, T. TSURU & T.

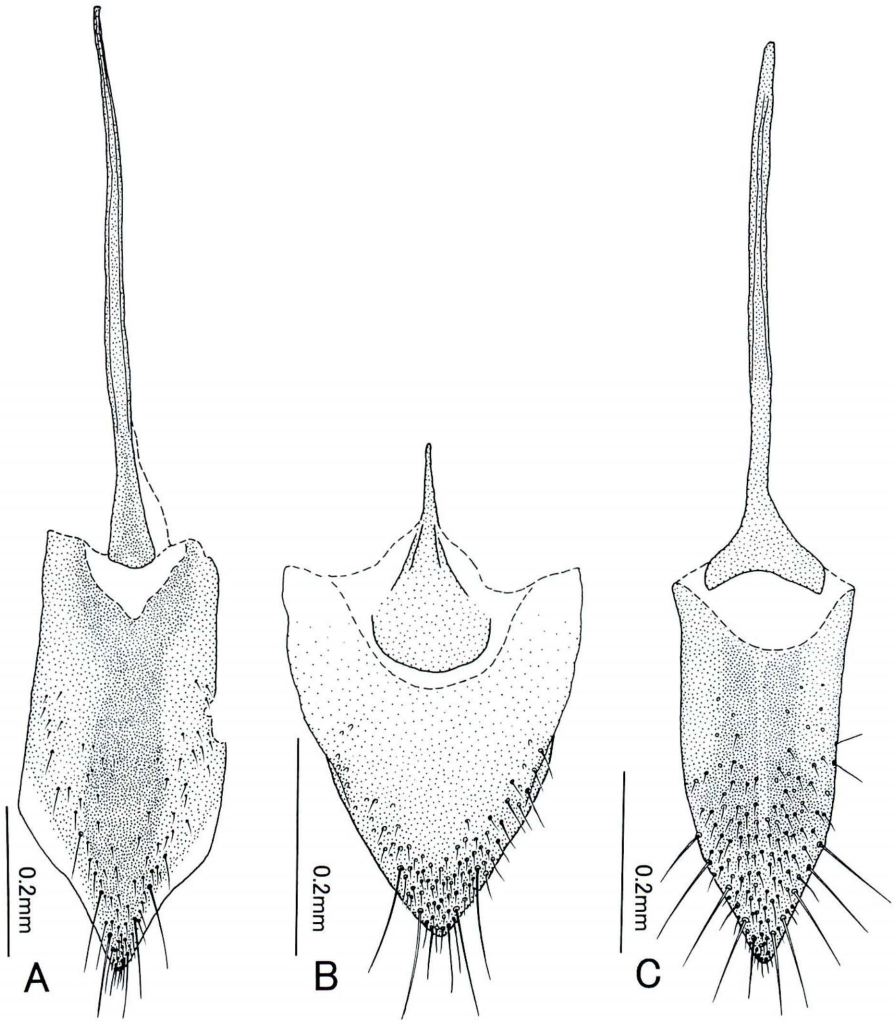

Fig. 3. Eighth abdominal sternite of female. —— A, *Mordellistenoda ohsumiana* (NAKANE); B, *M. aka* (KÔNO); C, *M. donan* sp. nov.

MITA; 2♂♂, 1–V–2004, T. MITA; 6♂♂, 30–IV–2004, T. TSURU; 12♂♂, 2♀♀, 29–IV–2004, T. TSURU & T. MITA; [Mt. Kubura-dake, Yonaguni Is.], 1♂, 2♀♀, 28–IV～2–V–2004, T. TSURU and others (by flight intercept trap); [Mt. Yarabu-dake, Ishigaki Is., S. Ryukyus], 1♀, 7–V–2003, T. KURIHARA. Specimens of the type series are deposited in the collection of the Laboratory of Insect Resources, Tokyo University of Agriculture, except for a male and a female paratypes in my private collections.

Distribution. Yonaguni and Ishigaki Is. (S. Ryukyus, SW. Japan).

Remarks. This new species is somewhat similar in general appearance to

Mordellistenoda aka (KÔNO, 1928) and *M. ohsumiana* (NAKANE, 1957), but obviously differs from them mainly in the character states given in the key, and also in the following point: eighth abdominal sternite of female with a very long and divaricate basal lobe, whereas it is very short and sectorial in *M. aka* and simple in *M. ohsumiana*. I have tentatively regarded this new species as a member of *Mordellistenoda* ERMISCH in view of peculiarities of the maxillary palpus and the hind tibial spurs. However, it obviously differs from that genus in the 4th antennal segment and the left paramere. It is therefore necessary to revise its systematic position by future investigations.

Etymology. The specific name of this new species, "donan", is an alias name of Yonaguni Island, the type locality. In former times, Yonaguni was called "donan", because it was not easy to reach that island. "Do (to)"means voyage, and "nan" means difficulty.

Note on habitat. Almost all the specimens examined in this study were collected by sweeping the floor of evergreen forests. It is inferred that this new species inhabits such forest floors.

Acknowledgements

I would like to express my hearty thanks to Prof. Shûji OKAJIMA, Tokyo University of Agriculture, and Dr. Shun-Ichi UÉNO, visiting professor at Tokyo University of Agriculture for their continuous guidance and encouragement. I am also much indebted to Dr. Masatoshi TAKAKUWA of the Kanagawa Prefectural Museum of Natural History, Odawara, for his kind advice. Deep thanks are also due to Messrs. Tadashi ISHIKAWA, Takashi KURIHARA and Toshiharu MITA for their kindness in offering valuable materials used in this paper.

要　　約

鶴　智之：琉球列島から得られたアカヒメハナノミ属の分類学的研究，および1新種の記載．—— 琉球列島の与那国島と石垣島から得られたアカヒメハナノミ属 *Mordellistenoda* の1新種を，*M. donan* と命名して記載した．本種は体色が黒褐色であることや，触角第4節が5節より短くなるなどの点で *M. aka* (KÔNO, 1928) から明瞭に区別される．また *M. ohsumiana* (NAKANE, 1957) とは，2本の後脛節端棘がほぼ同長となる点や小顎肢の末端節が長楕円形となる点などで明瞭に区別できる．しかしながら，本種は触角第4節が3節と同長となることや，雄交尾器の側片の形状がこの属の形質と異なっているため，本種の所属に関して今後の再検討が必要であろうと考えられる．なお，以上の3種を区別する形質として，ハナノミ科において初めて検討された雌の第8腹板を用いた．

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New Localities of *Cyphonocerus okinawanus okinawanus* (Coleoptera, Lampyridae, Psilocladinae) from the Okinawa Islands, the Middle Ryukyus

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As the psilocladine beetle of the genus *Cyphonocerus* from the middle Ryukyu Islands, only one species, *C. okinawanus okinawanus* NAKANE, 1983, was known from Okinawa-jima Is. (NAKANE, 1983; JENG *et al.*, 1998; KAWASHIMA *et al.*, 2003). In 2004, we were able to collect this insects from several small islands of the Okinawa Group, the middle Ryukyus.

Materials examined. [Iheya-jima Is.] 4♂♂, Mt. Koshi-dake, 29–II–2004; [Kume-jima Is.] 1♂, the middle of Shirase-gawa Riv., 15–II–2004; 3♂♂, ditto 17–II–2004; 1♂, ditto,